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ABSTRACT

Noting that the program is primarily a reading and verbal skills program for adult learners, this paper describes the Academic Remedial Training (ART) Program of the U.S. Navy. The first section of the paper discusses the historical background of the program. The second section describes the reading skills component and the verbal skills component of the program. The third section contains a profile of the recruit population, and the fourth section evaluates the success of the ART program. In summary, ART has been highly successful in remediating the deficiencies of recruits assigned to it, with success rates of 92 percent in 1981, 97 percent in 1983, and over 95 percent in 1984. (Tables of findings are included.) (DF)

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ACADEMIC REMEDIAL TRAINING: A LANGUAGE SKILLS DEVELOPMENT PROGRAM FOR U.S. NAVY RECRUITS

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Introduction

The goal of the symposium is to present information on the Academic Remedial Training (ART) Program of the U.S. Navy. The ART Program is primarily a reading and verbal skills program for an adult learner population comprised of selected Navy recruits. The presentations in the symposium will cover the historical background of the program, the program description, the population served, and the effectiveness of the program.

Historical Background

As early as the World War II time period, the U.S. Navy initiated programs to remediate deficiencies in academic skills among some personnel. The emphasis on this area of training has varied historically with the level and quality of manpower accessions. The development of policies and the ART Program for fundamental or basic skills training in the Navy will be described below.

In 1967, the Bureau of Personnel in the Department of the Navy established policies and procedures for official recognition of ART as a remedial reading program at the Navy's Recruit Training Centers (BUPERS ltr Code 0211 Ser: C21/209, 1967). However the Department of the Navy did not promulgate a Navy-wide policy regarding remedial training in basic skills until 1978. The policy statement issued by the Secretary of the Navy on 2 June 1978 stated: "It is the policy of the Department of the Navy to provide, when indicated, on-duty remedial job-relevant basic skills training in order to fill personnel requirements" (SECNAVINST 1510.3, 1978, p. 1). Job-relevant basic skills are defined as "those capabilities prerequisite to efficient completion of Navy training programs, adequate job performance and career advancement. Notable among these are literacy, study and computational skills" (SECNAVINST 1510.3, 1978, p. 1).

The commitment of the Navy to provide fundamental skills training for enlisted personnel was reiterated through a policy statement by the Chief of Naval Operations in 1982 (OPNAVINST 1510.11, 1982). The basic competencies defined in this policy statement are the same as the capabilities delineated previously in the policy statement by the Secretary of the Navy. The more recent policy statement identified reading, mathematics, and communication skills as the fundamental skills to be addressed. Furthermore, the policy states that "A major goal of enlisted fundamental skills training is to achieve a minimum reading competency of the ninth grade" (OPNAVINST 1510.11, 1982, p. 1). The ART Program is identified as one of the programs designed to provide enlisted fundamental skills training.

The ART Program was implemented officially by the Naval Technical Training Command in 1967 at each of the Navy's three Recruit Training Centers as a remedial reading course. The autonomy of the ART Program at the three sites allowed the course to evolve with dissimilar curricula and testing plans. The diversity of the program among the Recruit Training Centers led the Chief of Naval Technical Training to recognize the need for a standardized curriculum and testing plan. A prescribed curriculum and testing system were implemented in 1978 (CNTECHTRAINST 1540.42, 1982).

The prescribed curriculum and testing plan that were implemented on 1 October 1978 included remediation in both reading and study skills based on a 6.0 reading grade level screening criterion (Chief of Naval Technical Training, 1978). In 1983, an instructor guide for the curriculum was developed that contained model lesson plans for each of the reading and study skills addressed through remediation (Bowman, Kaiser, Jones, Malone, & Petry, 1983). A year later, the curriculum was revised to incorporate newer instructional materials and to extend the range of materials to accommodate an 8.0 reading grade level

screening criterion (Bowman, Kaiser, Jones, & Petry, 1984).

A verbal skills curriculum for ART was developed in 1980 (Chief of Naval Technical Training, 1980). This curriculum with its focus on listening and speaking skills was designed primarily for recruits who have limited proficiency in spoken English. The verbal skills curriculum was added to the ART program at the Orlando and San Diego Recruit Training Centers in 1981. In recent months, it has been implemented at the Great Lakes Recruit Training Center.

The goal of ART since initial implementation of the program has been to enable certain recruits to complete recruit training successfully. Until 1978, the scope of the program encompassed only the development of reading skills. The standardized program initiated in 1978 increased the scope to include study skills as well as reading skills. The addition of the verbal skills component beginning in 1981 expanded the program to address listening and speaking skills of selected recruits. The population served through ART is delimited to enlisted personnel who have not begun recruit training or have encountered academic problems after initiating recruit training.

Program Description

The reading skills component of ART incorporates a screening-diagnostic-prescriptive-progress testing strategy (Bowman et al., 1984). The reading comprehension subtest of the Gates-MacGinitie Reading Tests, Second Edition (MacGinitie, 1978), is used as a screening test with all recruits who enter the Navy. When standardization of ART began in 1978, the Gates-MacGinitie Reading Comprehension Test--Level D was utilized as the screening instrument. In November, 1982, multi-level testing with Levels D, E, and F was implemented to provide more precise assessment of reading comprehension skills for recruits with higher achievement levels. The assignment of the test level for the

initial administration during the first week of recruit training is determined by an algorithim based on the sum of the recruit's standard scores on the Word Knowledge and Paragraph Comprehension tests of the Armed Services Vocational Aptitude Battery (United States Military Enlistment Processing Command, 1967-80).

In the screening process, the recruits who score at or below a specified criterion are retested with an alternate form of the Gates-MacGinitie--Level D to confirm the need for reading remediation. The 6.0 reading grade level (RGL) criterion was specified in the 1978 curriculum. (Local Navy Training Commands could deviate above the 6.0 RGL screening criterion to maintain constant enrollment in ART.) In the revised 1984 curriculum implemented during fiscal year 1985, the criterion was increased to require confirmation testing for recruits who score 8.0 RGL or below. The recruits with RGL scores of 6.0 or below on the second administration are assigned to ART for remediation. Recruits with RGL scores between 6.0 and 8.0 are assigned to ART on a space-available basis. The current policy of the Navy requires that recruits who have RGL scores of below 6.0 must be assigned to ART for a minimum of one week before they can be reviewed for possible discharge from military service.

The Stanford Diagnostic Reading Test (SDRT), 1976 Edition (Karlsen, Madden, & Gardner, 1976), is used to identify the specific reading deficiencies of recruits assigned to ART. The Brown Level of the SDRT is administered to all recruits assigned to ART before remediation begins. The SDRT can be scored to identify deficiencies at three levels that correspond to levels of ART curricular objectives: general, terminal, or enabling. Diagnoses are made at the lowest level of specificity--the enabling objective level.

The reading and study skills curriculum used in ART is organized in ten modules: 2 on phonetic analysis (consonants and vowels), 2 on structural

analysis (word division and blending), 1 on vocabulary, 2 on reading comprehension (literal and inferential), 1 on reading rate, and 2 on study skills (study techniques and notetaking/testtaking). While assignment to the reading skills modules is based on the diagnoses at the enabling objective level with the SDRT, all recruits who are assigned to ART complete the two study skills modules. The recruit who is assigned all modules would normally complete the program within five weeks. Most recruits require considerably less time to remediate their deficiencies.

Prescriptive instructional activities utilizing largely elements from commercial reading materials have been specified in skill prescriptions designed for each enabling objective of the curriculum. In addition, the Instructor Guide for Academic Remedial Training Literacy Skills Curriculum (Bowman et al., 1983) provides representative lesson plans for the curriculum's enabling objectives. Prescriptive activities are assigned to the recruit for remediation of each identified skill deficiency. Group instruction is used in conjunction with the skill prescriptions to provide an individualized, self-paced approach in the implementation of the curriculum.

Criterion tests have been developed for each of the ten modules of the curriculum. The three forms of each test are used as progress tests that are administered when the recruit completes each assigned module encompassing any enabling objective on which a deficiency is diagnosed. These tests were utilized as exit tests for the modules during 1978-84. The recently revised curriculum specifies that the form of the SDRT not used for the diagnosis of deficiencies must be used as the exit test for the reading skills modules (terminal objectives) of the curriculum.

The verbal skills component of ART is designed for recruits who are identified after assignment to ART as having oral language skill deficiencies.

The identification is based on an interview dealing with the recruit's language skill background. The two-three weeks of instruction involving this component focus on Navy vocabulary, grammatical structures, and language fluency. The methodology used in the curriculum incorporates group instruction, small group activities, and individual assignments. Criterion testing is utilized in assessing performance on each module. Recruits who complete the verbal skills component of ART may be exempt from some initial modules of the reading component.

The implementation of the standardized ART reading curriculum required the use of a Computer-Managed Instruction (CMI) system to perform test scoring functions. The CMI system is utilized to score the Gates-MacGinitie, the SDRT, and the criterion tests employed in the program. A product of using the CMI system for test scoring is a data base on the reading comprehension skill levels and educationally related characteristics of all Navy recruits. In addition, data on skill deficiencies and criterion test performance of ART students are available from computer records. Monthly CMI reports on the educational, aptitudinal, and reading characteristics of the total recruit accessions are routinely prepared and distributed to ART Program mangement personnel.

Recruit Population Profile

Data contained in the monthly CMI reports for fiscal years 1981-84 were compiled and analyzed to provide selected profile information on the Navy's recruit population. Summarized data by fiscal year are presented on three variables: years of education, high school graduation status, and reading grade level. Frequency and percentage distributions and means are presented for the descriptive data. An inferential statistical technique--confidence interval limits--was used to compare proportions of high school graduate and

non-high school graduate recruits who scored below the 6.0 RGL.

The educational background and reading grade level means of recruits are reported in Table 1 for fiscal years 1981-84. The means for years of education remained constant at 11.7 years in the first two years; however, the means increased slightly to 12.0 years in the last two years. While about four fifths of the recruits in 1981 and 1982 were high school graduates, nine tenths of the recruits in 1983 and 1984 were high school graduates. The higher mean for years of education and percentage of high school graduates in 1983 can be attributed primarily to a temporary restriction on Navy enlistment to high school graduates, with few exceptions, during June-September, 1983. The mean for years of education and the percentage of high school graduates remained at the increased level in 1984. The mean for RGL on comprehension remained stable at 9.8 or 9.9 during the four-year period although the means for years of education and the percentages of high school graduates were higher in the last two years.

Table 2 presents the frequency and percentage distributions of recruits by RGL category for fiscal years 1981-84. The percentages of recruits who scored below the 6.0 RGL (test norms do not include the 6.0 RGL) were relatively stable at about 3.5% for the first three years but decreased to less than 3% in the last year. (These recruits were retested with a second form of the Gates-MacGinitie for confirmation of reading deficiencies before assignment to the ART Program.) The percentages of recruits with RGL scores between 6.1 and 8.0 ranged from 9.51% in 1983 to 16.32% in 1982. After a decrease from 39.63% in 1981 to 32.27% in 1982 for the percentage of recruits who scored above the 12.0 RGL, the percentage increased to 47.17% in 1983 when multi-level testing with the Gates-MacGinitie was implemented and remained at the same percentage in 1984.

TABLE 1

EDUCATIONAL BACKGROUND AND READING GRADE LEVEL
MEANS OF RECRUITS BY FISCAL YEAR

Fiscal Year	Years of Education		High School Graduation Status				Reading Level
			Yes		No		
	N	Mean	f	%	f	%	Mean
1981	85,931	11.7	66,120	78.38	18,233	21.62	9.9
1982	78,539	11.7	60,306	79.07	15,967	20.93	9.8
1983	69,279	12.0	61,190	90.94	6,096	9.06	9.9
1984	75,886	12.0	69,345	91.41	6,513	8.59	9.9
Total	309,635	11.8	256,961	84.59	46,809	15.41	9.9

TABLE 2

FREQUENCY AND PERCENTAGE DISTRIBUTIONS OF RECRUITS
FOR FY81-84 BY READING GRADE LEVEL

FY		Reading Grade Level Category					
		6.0 or below	6.1-8.0	8.1-10.0	10.1-12.0	Above 12.0	Total
1981	f	3,058	11,184	13,737	23,897	34,055	89,931
	%	3.56	13.02	15.99	27.81	39.63	100.01
1982	f	2,911	12,819	14,636	22,828	25,345	78,539
	%	3.71	16.32	18.64	29.07	32.27	100.01
1983	f	2,431	6,587	10,251	17,331	32,679	69,279
	%	3.51	9.51	14.80	25.02	47.17	100.01
1984	f	2,171	7,543	11,437	18,627	35,514	75,292
	%	2.88	10.02	15.19	24.74	47.17	100.00
Total	f	10,571	38,133	50,061	82,683	127,593	309,041
	%	3.42	12.34	16.20	26.75	41.29	100.00

Table 3 contains comparative data for fiscal years 1981-84 and related analyses of the proportions of recruits who scored below the 6.0 RGL classified by high school graduation status. Within the composite groups, 3.51% of the high school graduates and 2.45% of the non-high school graduates scored below the 6.0 RGL on reading comprehension. The percentages with RGL scores below 6.0 were relatively stable for both groups in the first three fiscal years but decreased for both groups in 1984.

The proportions of high school graduates and non-high school graduates who scored below the 6.0 RGL were compared by computing confidence limits for the differences in proportions using the .95 level of confidence. The results indicated that the difference for the composite groups was significant since the confidence limits did not include 0 within the range. The proportions also differed significantly for each of the four fiscal years. In all comparisons, the proportions of high school graudates who scored below the 6.0 RGL were greater than the corresponding proportions for non-high school graduates.

Program Evaluation

At the present time, the principal criterion that is used to evaluate ART is the percentage of attrition among students assigned to the program as reported in Table 4. The percentage of attrition is derived by multiplying 100 times the ratio of attrites to student flow. Student flow is defined as the sum of input (students assigned to ART), graduates, and attrites divided by 2. The data on these variables were obtained for fiscal years 1981-84.

As stated earlier, Navy recruit assignment to ART during 1981-84 was based primarily on (1) scoring below the 6.0 RGL on two administrations of the Gates-MacGinitie at the beginning of recruit training or (2) academic test failure after initiating recruit training. During fiscal years 1981-83, the number of recruits assigned to ART as shown in Table 4 varied by less than 100

TABLE 3

COMPARISON OF PROPORTIONS OF RECRUITS SCORING BELOW SIXTH READING GRADE LEVEL FOR FY81-84 BY HIGH SCHOOL GRADUATION STATUS

FY	High School Graduate				Confidence Limits .025 to .975
	Yes		No		
	N	p	N	p	
1981	66,120	.0380	18,233	.0250	.0101 to .0156
1982	60,306	.0388	15,967	.0243	.0117 to .0173
1983	61,190	.0351	6,096	.0249	.0061 to .0143
1984	69,345	.0290	6,513	.0229	.0023 to .0099
Total	256,961	.0351	46,809	.0245	.0091 to .0121

TABLE 4

SUMMARY OF EVALUATIVE DATA ON ART FOR FY81-84

Variable	Fiscal Year			
	1981	1982	1983	1984
Number assigned to ART	3,109	3,191	3,186	3,891
Percentage of accessions	3.24	3.76	4.08	4.42
Number of ART graduates	2,687	2,727	2,841	3,419
Number of ART attrites	245	132	104	176
Attrition percentage*	8.11	4.36	3.39	4.70

*Based on student flow

$$\text{Student Flow} = \frac{\text{Input} + \text{Graduates} + \text{Attrites}}{2}$$

$$\text{Attrition Percentage} = \frac{\text{Attrites}}{\text{Student Flow}} \times 100$$

recruits from a low of 3,109 in 1981 to a high of 3,191 in 1982. The number of assigned recruits increased by about 700 recruits in 1984. The percentage of recruits entering the Navy who were assigned to ART increased each year--from 3.24% in 1981 to 4.42% in 1984. The increases in percentages probably reflect the use of a higher screening criterion to maintain relatively stable enrollment in ART throughout the year and more referrals because of academic problems in recruit training.

The data on ART graduates showed increases in the number of recruits who graduated each year. Although the number of recruits assigned to ART was almost the same in 1982 and 1983, the number of graduates increased by 114 recruits. The number of graduates increased dramatically in 1984 when more recruits were assigned to ART. The number of recruits who attrited from ART decreased considerably during the first three years but increased in the last year when more recruits were assigned to ART. These numbers represent the actual number of graduates and attrites during the respective fiscal years. Some of the recruits who graduated or attrited in each fiscal year were assigned to ART in the previous fiscal year. The student flow statistic is used, therefore, to provide a measure of the number of recruits served during the year.

Based on the student flow statistic, the percentages of recruits who attrited from ART decreased appreciably during fiscal years 1981-83 and increased in fiscal year 1984. While the attrition rate was 8.11% in 1981, it decreased to 4.36% in 1982 and 3.39% in 1983 but increased to 4.70% in 1984. The success rate of the program, defined as 100% minus the attrition percentage, has shown appreciable improvement from approximately 92% in 1981 to 96% in 1982, 97% in 1983, and 95% in 1984.

Summary and Conclusions

Basic skills training in the Navy has become increasingly important as the quality of the recruit population has declined and the job demands faced by enlisted personnel have expanded. In the context of an All Volunteer Force and reductions in the number of available personnel who qualify for military service, the Navy must maintain such programs in order to meet its mission requirements.

While ART has been in operation at the Navy's Recruit Training Centers for several years, a standardized curriculum and testing plan have been utilized only since 1978. The population served by ART has consisted of those recruits who scored below the 6.0 RGL in reading comprehension on the screening test and recruits with higher RGL scores who had academic difficulty during recruit training. The screening criterion was increased to the 8.0 RGL in the new curriculum that was implemented during fiscal year 1985.

During fiscal years 1981-84, increases are observed in the mean for years of education and percentage of high school graduates among Navy recruits. The means for RGL and percentages of recruits scoring below the 6.0 RGL are reasonably stable for this time period. A slightly increasing percentage of the recruits were assigned to ART as a result of the screening test scores or academic failure during the four fiscal years.

Higher percentages of high school graduates than non-high school graduates score below the 6.0 RGL on reading comprehension. Among fiscal years 1981-84, the differences ranged from .61% in 1984 to 1.45% in 1982. The comparisons of proportions of high school graduates and non-high school graduates scoring below the 6.0 RGL reveal significantly higher proportions for high school graduates.

ART is highly successful in remediating the reading deficiencies of

recruits assigned to the program. Although the success rate was impressive in 1981--almost 92%, it increased to almost 97% in 1983 and exceeded 95% in 1984. Refinements made in the program since standardization occurred in 1978 have increased its effectiveness in addressing the academic needs of Navy recruits. Continued attention will be given to maintain an effective and relevant program because of the importance of ART in Navy training.

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